EDG-4508+

8-Port Ethernet to
RS-232/422/485 Data Gateway

EDG-4508R+

8-Port Ethernet to
RS-232/422/485 Data Gateway
with Rear Wiring

EDG-4516+

16-Port Ethernet to
RS-232/422/485 Data Gateway

EDG-4516R+

16-Port Ethernet to
RS-232/422/485 Data Gateway
with Rear Wiring

User Manual

Copyright

This documentation and the software included with this product are copyrighted 2004 by Advantech Co., Ltd. All rights are reserved. Advantech Co., Ltd. reserves the right to make improvements in the products described in this manual at any time without notice. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written permission of Advantech Co., Ltd. Information provided in this manual is intended to be accurate and reliable. However, Advantech Co., Ltd. assumes no responsibility for its use, nor for any infringements of the rights of third parties which may result from its use.

Acknowledgments

IBM and PC are trademarks of International Business Machines Corporation. MS-DOS and Windows are trademarks of Microsoft Corporation. Intel and Pentium are trademarks of Intel Corporation. All other product names or trademarks are properties of their respective owners.

CE Notification

The EDG-4508(R)+ and EDG-4516(R)+ developed by Advantech Co., Ltd. has passed the CE test for environmental specifications when operated within an industrial enclosure . Therefore, in order to protect the products from being damaged by ESD (Electric Static Discharge), we strongly recommend the use of CE-compliant industrial enclosure products when using any EDG module.

This manual covers the following models:

- EDG-4508+
- EDG-4516+
- EDG-4508R+
- EDG-4516R+

Part No. 2003450841 5th Edition
Printed in Taiwan Jan. 2006

Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

FCC Class A

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Technical Support and Assistance

Step 1. Visit the Advantech web site at **www.advantech.com/support** where you can find the latest information about the product.

Step 2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
- Product name and serial number
- Description of your peripheral attachments
- Description of your software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wording of any error messages

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- EDG-4508+ or EDG-4516+ or EDG-4508R+ or EDG-4516R+ x 1
- CD-ROM for driver and utility x 1
- Rack mount kit, including 2 L-shape metal plates and 8 screws
- Power Cable x 1
- 30 cm Serial Connection Cable x 1
- Rubber Spacer x 4
- Terminal Connector x 1

Contents

Chapter 1 Overview 2

1.1 Introduction 2
1.2 Features 2
1.3 Specifications 3
1.4 Packing Checklist 3

Chapter 2 Getting Started 6

Figure 2.1:Installation Flow Chart 6
2.1 Understanding EDG-4508(R)+ and EDG-4516(R)+ 7
2.2 Connecting Hardware 8
Figure 2.2:EDG-4508+/4516+ Front Panels 8
Figure 2.3:EDG-4508R+/4516R+ Front Panels 8
Figure 2.4:EDG-4508+/4516+ LED Indicators and Connectors 9
Figure 2.5:EDG-4508R+/4516R+ LED Indicators 9
Table 2.1:EDG-4508+/4516+ LED & Connector Definitions 10
Figure 2.6:EDG-4508+/4516+ Rear Panel 11
Figure 2.7:EDG-4508R+/4516R+ Rear Panel 11
2.2.1 Rack Mounting 12
Figure 2.8:Rack Mounting 12
2.2.2 Network Connection 13
Figure 2.9:Ethernet Connector of EDG-4508+/4516+ 13
Figure 2.10:Ethernet Connector of EDG-4508R+/4516R+ 13
2.2.3 Power Supply Connection 14
Figure 2.11:Power Switch and Connector with Fuse .. 14
2.2.4 Serial Port Connection 14
Figure 2.12:8 Ports RS-232/422/485 Serial Connector for EDG-4508+ 14
Figure 2.13:16 Ports RS-232/422/485 Serial Connector for EDG-4516+ 14
Figure 2.14:RS-232/485/422 Serial Connectors for EDG-4508R+/4516R+ 14
2.2.5 Ordering Information 15
2.3 Installation 16
2.3.1 Install/Uninstall Driver & Utility 16

Chapter 3 Configuration 22

3.1 Auto Search 22
3.2 Locating EDG-4508(R)+/4516(R)+ 24
3.3 Device System Configuration 25
3.4 Network Configuration 26
3.5 Port Configuration 27

3.6 Security Configuration 33
Chapter 4 Port Mapping Utility 36
4.1 Overview 36
4.2 Virtual COM Port Settings 36
4.3 Inquiring Virtual COM Port Setting 39
4.3.1 Updating EDG Firmware 40
4.3.2 Self Test Function 41
4.3.3 Save the Configuration 44
Chapter 5 Web-Based Configuration 46
5.1 Overview 46
5.2 Access Web Page 46
5.3 Network Configuration 47
5.4 Port Configuration 48
5.5 DI/O Event Configuration 49
5.6 Reset Configuration 50
Chapter 6 Console Configuration 52
6.1 Overview 52
6.2 Hyper Terminal Connection 52
6.3 Command List 54
Chapter 7 Event and DI/O Monitoring 62
7.1 Overview 62
7.2 Event and DI/O Monitoring 62
7.2.1 Polling Monitoring 62
7.2.2 Event Monitoring 63
7.2.3 DI Value Inverse Option 64
7.3 Programming I/O 66
Chapter 8 Troubleshooting 70
Appendix A 74
A.1 RS-232 Pin Assignment 74
A.2 RJ-48 Cable PIN Assignment 74

CHAPTER 1

Overview

Chapter 1 Overview

1.1 Introduction

This manual provides the necessary information to use EDG-4508(R)+ and EDG-4516(R)+. The Advantech Ethernet Data Gateway series (EDG series) consists of fast and cost-effective data gateways between RS-232/422/485 and Ethernet interfaces.

EDG-4508(R)+ and EDG-4516(R)+ are part of the Ethernet Data Gateway (EDG) family of multiple port modules. They provide reliable and cost-effective network connections for serial devices, allowing users to extend their limited COM ports without changing the architecture of their existing application (s). EDG immediately upgrades users' existing device to the Internet world.

EDG-4508(R)+ and EDG-4516(R)+ provide 8 and 16 serial ports respectively, that can be easily configured. To increase the reliability of systems, EDG-4508(R)+ and EDG-4516(R)+ provide two significant functions:

- Auto-reconnection and IP access control.
- Support for transmission speeds up to 230 kbps (RS-485), meeting today's demand for high-speed data exchanges.

1.2 Features

- Supports 8/16 channels (8 Channels for EDG-4508(R)+, 16 Channels for EDG-4516(R)+).
- Supports RS-232/422/485
- 4 DI, 4 DO for alarm handling
- Web-based configuration
- Auto-reconnection: automatic connection recovery to network
- LEDs for power status and all ports Tx/Rx monitoring
- Console mode configuration
- Supports front wiring access for EDG-4508+ and EDG-4516+, rear wiring access for EDG-4508R+ and EDG-4516R+

1.3 Specifications

- I/O controller: 16C654 or compatible (auto hardware flow control)
- LAN Speed: 100Base-TX (10/100 Mbps)
- Ethernet Connection: RJ-45
- Serial: RS-232, RS-422 and RS-485
- Serial Connection: RJ-48
- DI/O: programmable 4DI,4DO for extra control
- Signals: TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND
- Speed: 50 ~ 230 kbps
- Data bits: 5, 6, 7, 8
- Stop bits: 1, 1.5, 2
- Parity: none, even, odd, space, mark
- Max. Windows Virtual Port: 255
- OS: Windows 98/NT/2000/XP
- Power requirements: 90 V AC ~ 260 V AC, 47 ~ 63 Hz
  (optional dual power supply for redundant use)
- Operating temperature: 0° ~ 55° C (32° ~ 131° F)
- Surge protection: 15,000 V ESD
- Signals : Full Modem control signals (Doesn't support RAS service)

1.4 Packing Checklist

- EDG-4508+ or EDG-4516+ or EDG-4508R+ or EDG-4516R+ x 1
- CD-ROM for driver and utility x 1
- Rack mount kit, include 2 L-shape metal plates and 8 screws
- Power Cable x 1
- 30cm Serial Connect Cable x 1
- Rubber Spacer x 4
- Terminal Connector x 1

CHAPTER 2

Getting Started

Chapter 2 Getting Started

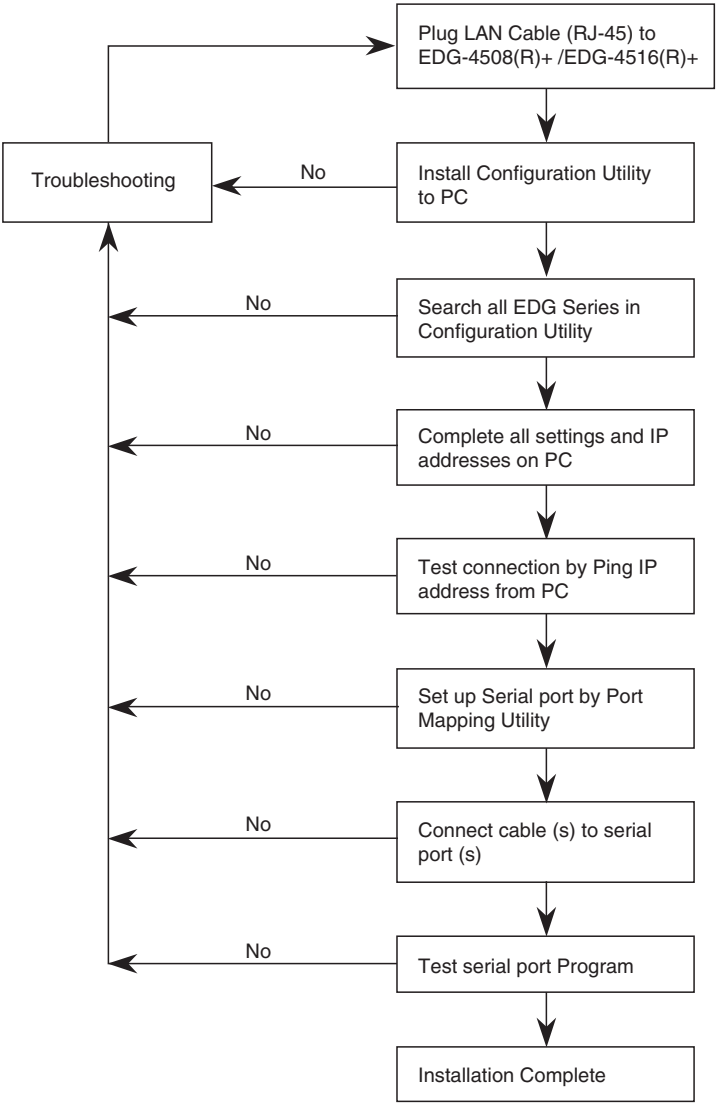


Figure 2.1: Installation Flow Chart

2.1 Understanding EDG-4508(R)+ and EDG-4516(R)+

EDG-4508(R)+ and EDG-4516(R)+ are advanced Ethernet data gateway units. They extend traditional COM ports of a PC to Ethernet access. Through Ethernet networking, users can control and monitor remote serial devices and equipment over LAN or WAN.

Since EDG-4508(R)+ and EDG-4516(R)+ are connected with the TCP/IP protocol, you will have to know fundamental facts about Ethernet networking to get the server setup correctly.

To allow for easier configuration, we provide several system configuration methods such as Configuration Utility, Web Configuration and Console mode Configuration. More details will be available in the following chapters.

2.2 Connecting Hardware

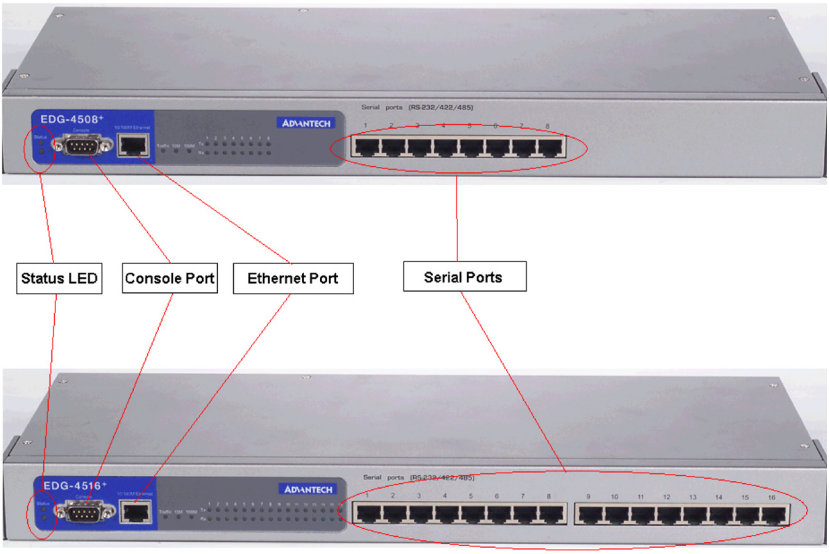


Figure 2.2: EDG-4508+/4516+ Front Panels

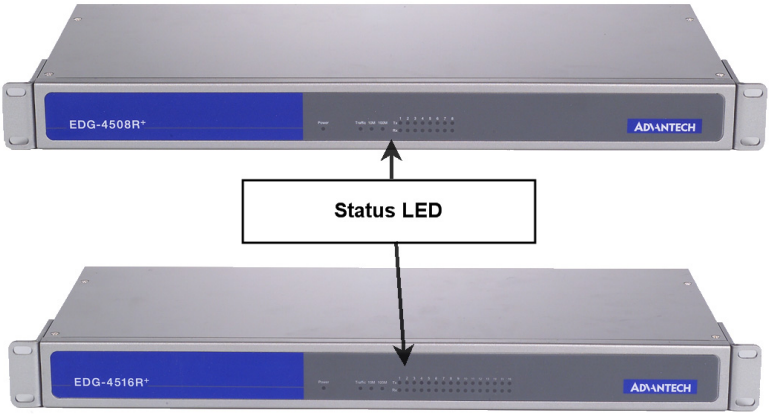


Figure 2.3: EDG-4508R+/4516R+ Front Panels

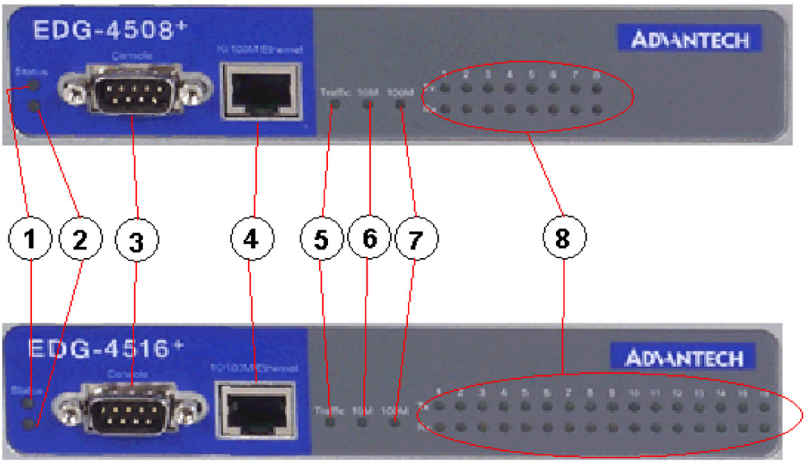


Figure 2.4: EDG-4508+/4516+ LED Indicators and Connectors

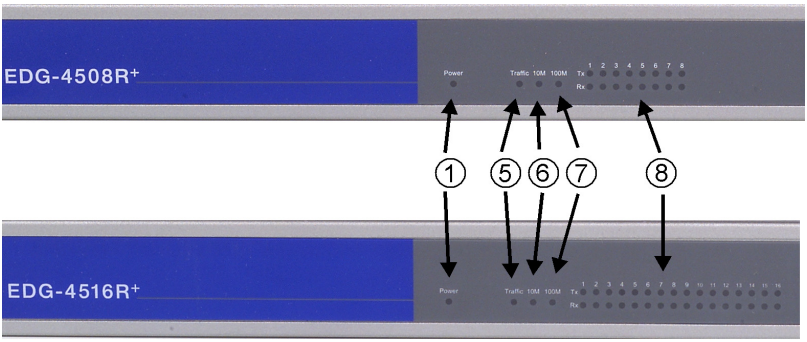


Figure 2.5: EDG-4508R+/4516R+ LED Indicators

Table 2.1: EDG-4508+/4516+ LED & Connector Definitions			
Item	**LED**	**Status**	**Description**
①	Status	ON	Power on
		OFF	Power off or no power
		Flash	Status Heart Beat Monitoring
		Steady	Device Locate Function Enable
②	Status	Dual Power Indicator (Optional)	
③	Console	F Type Console connector for Console Configuration Use	
④	Ethernet	RJ-45 Ethernet Connector	
⑤	Traffic (Ethernet)	ON	Ethernet data being received/transmitted
		OFF	No data being received/ transmitted
⑥	10M	ON	10 Mbps speed
		OFF	Invalid 10 Mbps network link
⑦	100M	ON	100 Mbps speed
		OFF	Invalid 100 Mbps network link
⑧	Tx (Port N) N = 1~ 8/16	ON	Serial port data being transmitted
		OFF	No data being transmitted
	Rx (Port N) N = 1~8/16	ON	Serial port data being received
		OFF	No data being received

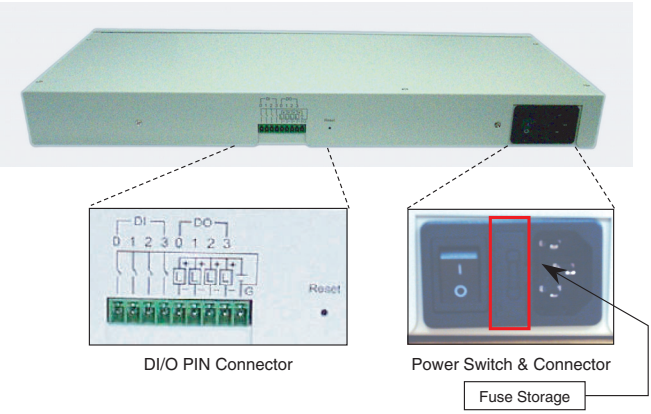


Figure 2.6: EDG-4508+/4516+ Rear Panel

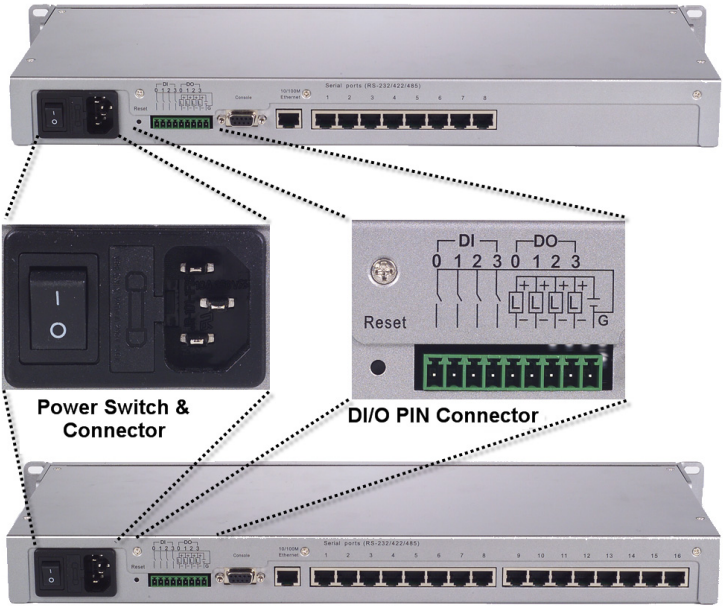


Figure 2.7: EDG-4508R+/4516R+ Rear Panel

2.2.1 Rack Mounting

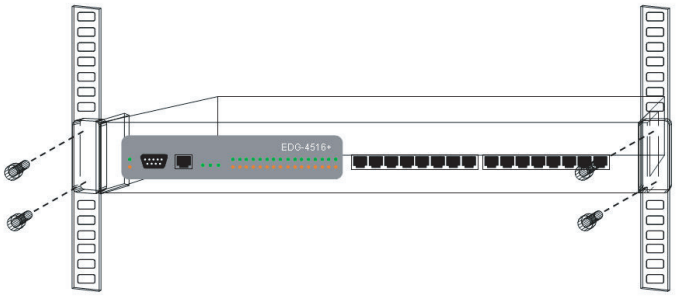


Figure 2.8: Rack Mounting

2.2.2 Network Connection

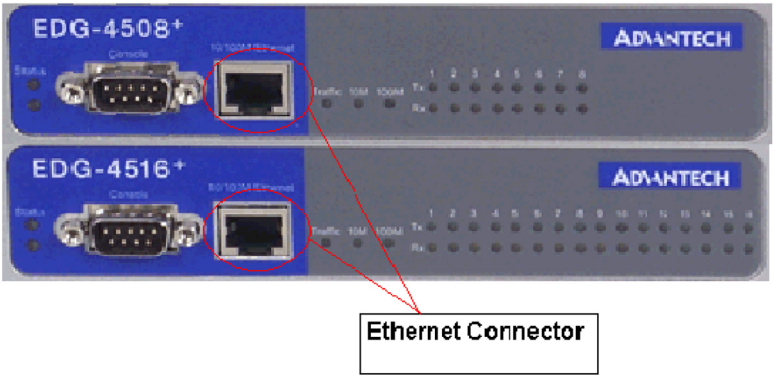


Figure 2.9: Ethernet Connector of EDG-4508+/4516+

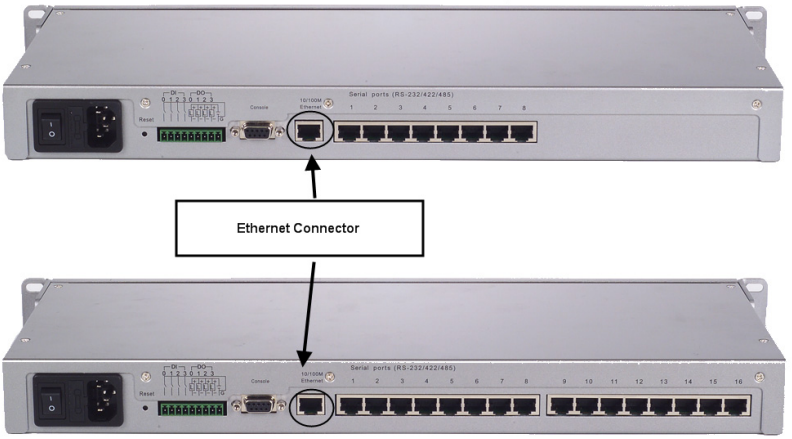


Figure 2.10: Ethernet Connector of EDG-4508R+/4516R+

2.2.3 Power Supply Connection

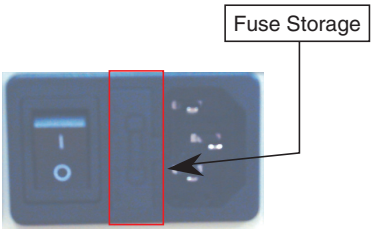


Figure 2.11: Power Switch and Connector with Fuse

2.2.4 Serial Port Connection

Figure 2.12: 8 Ports RS-232/422/485 Serial Connector for EDG-4508+

Figure 2.13: 16 Ports RS-232/422/485 Serial Connector for EDG-4516+

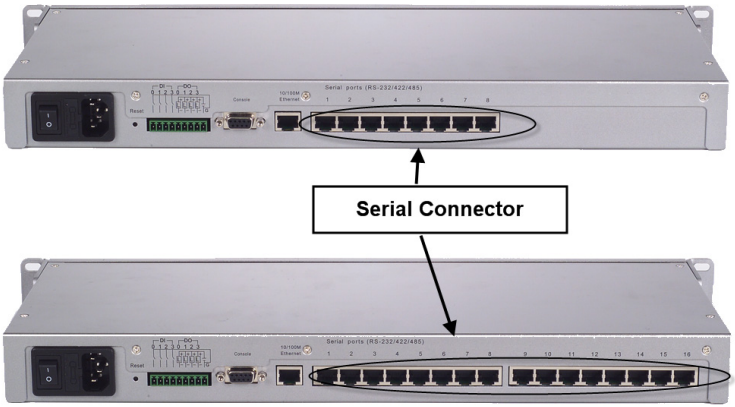


Figure 2.14: RS-232/485/422 Serial Connectors for EDG-4508R+/4516R+

2.2.5 Ordering Information

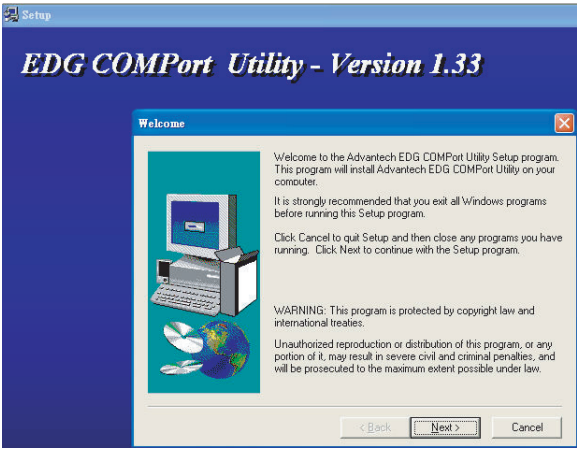
- **EDG-4508+**
  8-port RS-232/422/485 to Ethernet Data Gateway with Front Wiring
- **EDG-4508R+**
  8-port RS-232/422/485 to Ethernet Data Gateway with Rear Wiring
- **EDG-4516+**
  16-port RS-232/422/485 to Ethernet Data Gateway with Front Wiring
- **EDG-4516R+**
  16-port RS-232/422/485 to Ethernet Data Gateway with Rear Wiring
- **Communication Cable RJ48 to DB9 30cm (1701090300)**
  30 cm RJ48 to DB9 M-Type RS-232/422/485 Cable
- **Communication Cable RJ48 to DB9 100cm (1703091001)**
  100 cm RJ48 to DB9 M-Type RS-232/422/485 Cable
- **Terminal Connector (1654909900)**
  Terminal Connector for Test Usage

2.3 Installation

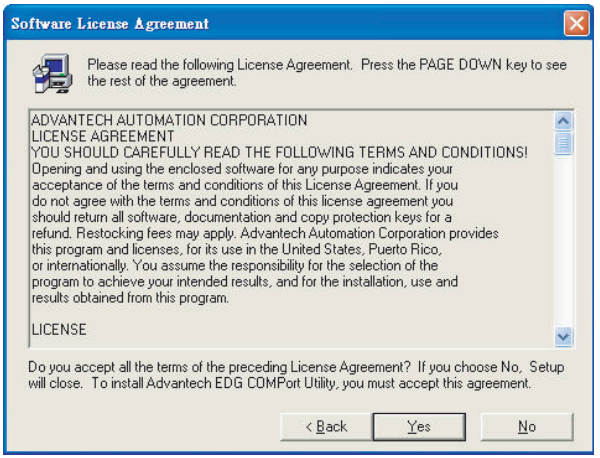
2.3.1 Install/Uninstall Driver & Utility

In order to use a PC and an Ethernet network to control serial devices connected to EDG-4508(R)+ and EDG-4516(R)+, you must first have a host running Windows 98/NT/2000/XP. This type of application also requires the host to have an Ethernet card and the TCP/IP protocol installed. The following are the required steps for installing EDG-4508(R)+ and EDG-4516(R)+.

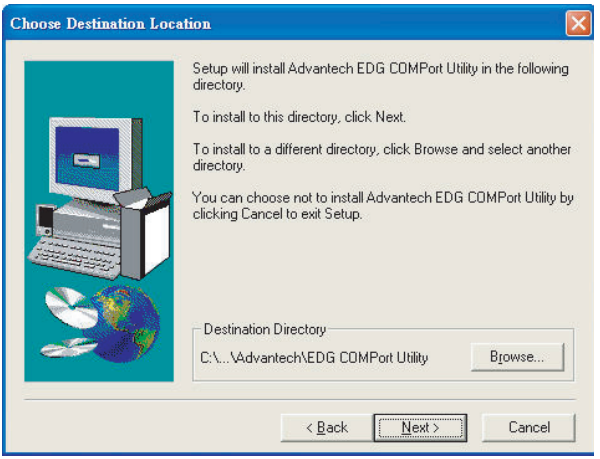
1. Insert the Advantech industrial communication CD-ROM into the drive (e.g. D:\) on the host PC. Change the host computer's default drive from C: to D:
2. Use your Windows Explorer or the Windows Run command to execute the Setup program (the path for the Setup program on the CD-ROM should be D:\ EDG-4508(R)+_4516(R)+\COMPortUtility\SETUP.EXE, if your default CD-ROM drive is D:).
3. Upon executing the setup program, the Welcome Dialog Box will pop-up. Press the "Next" button to continue.

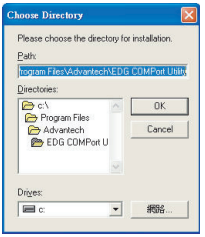

Setup
EDG COMPort Utility - Version 1.33
Welcome
Welcome to the Advantech EDG COMPort Utility Setup program. This program will install Advantech EDG COMPort Utility on your computer.
It is strongly recommended that you exit all Windows programs before running this Setup program.
Click Cancel to quit Setup and then close any programs you have running. Click Next to continue with the Setup program.
WARNING: This program is protected by copyright law and international treaties.
Unauthorized reproduction or distribution of this program, or any portion of it, may result in severe civil and criminal penalties, and will be prosecuted to the maximum extent possible under law.
< Back
Next >
Cancel

4. Carefully read the Software License Agreement, and press "Next" to continue.

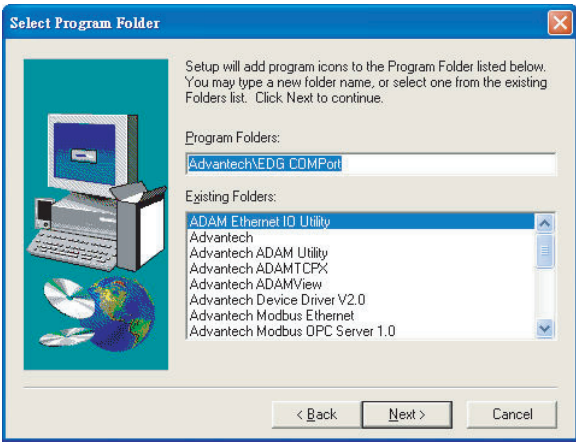

Software License Agreement
Please read the following License Agreement. Press the PAGE DOWN key to see the rest of the agreement.
ADVANTECH AUTOMATION CORPORATION
LICENSE AGREEMENT
YOU SHOULD CAREFULLY READ THE FOLLOWING TERMS AND CONDITIONS!
Opening and using the enclosed software for any purpose indicates your acceptance of the terms and conditions of this License Agreement. If you do not agree with the terms and conditions of this license agreement you should return all software, documentation and copy protection keys for a refund. Restocking fees may apply. Advantech Automation Corporation provides this program and licenses, for its use in the United States, Puerto Rico, or internationally. You assume the responsibility for the selection of the program to achieve your intended results, and for the installation, use and results obtained from this program.
LICENSE
Do you accept all the terms of the preceding License Agreement? If you choose No, Setup will close. To install Advantech EDG COMPort Utility, you must accept this agreement.
< Back
Yes
No

5. The Setup program will specify a default installation path, C:\Program Files\Advantech\EDG COMPort Utility.

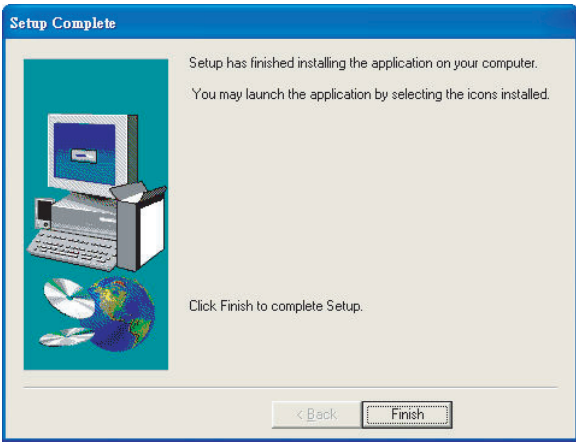

Choose Destination Location
Setup will install Advantech EDG COMPort Utility in the following directory.
To install to this directory, click Next.
To install to a different directory, click Browse and select another directory.
You can choose not to install Advantech EDG COMPort Utility by clicking Cancel to exit Setup.
Destination Directory
C:\...\Advantech\EDG COMPort Utility
Browse...
< Back
Next >
Cancel

	If a new destination path is necessary, just click the Browse button to change the path. After you have specified the installation path, click the Next button.

6. In this step, you may select a specific program folder or just use the default setting and press "Next".


Select Program Folder
Setup will add program icons to the Program Folder listed below. You may type a new folder name, or select one from the existing Folders list. Click Next to continue.
Program Folders:
Advantech\EDG COMPort
Existing Folders:
ADAM Ethernet IO Utility
Advantech
Advantech ADAM Utility
Advantech ADAMTCPX
Advantech ADAMView
Advantech Device Driver V2.0
Advantech Modbus Ethernet
Advantech Modbus OPC Server 1.0
< Back
Next >
Cancel

7. After setup has copied all program files to your computer, click the Finish button to finish the installation.


Setup Complete
Setup has finished installing the application on your computer.
You may launch the application by selecting the icons installed.
Click Finish to complete Setup.
< Back
Finish

CHAPTER 3

Configuration

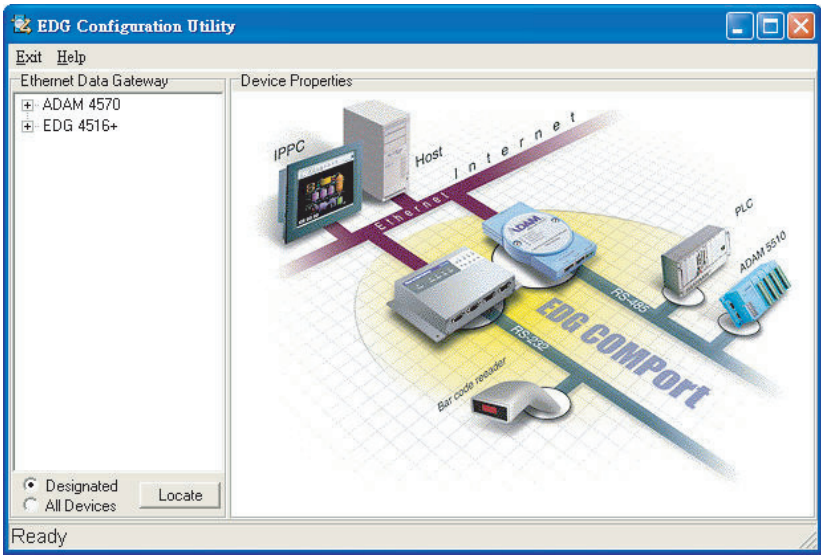
Chapter 3 Configuration

3.1 Auto Search

EDG-4508(R)+/4516(R)+ provides an easy-to-use configuration utility to configure your Ethernet Data Gateway Device through an Ethernet connection. The utility provides an auto-search function to show your device(s) by simply executing the configuration utility program from the Start Menu as follows.

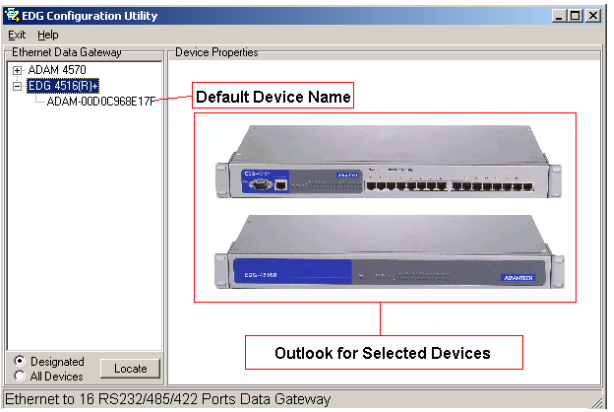
Start Menu --> All Program --> Advantech --> EDG COMPort

This EDG configuration utility will automatically search all the EDG devices on the network and show them on the left side of the utility. From here you can easily configure various parameters for TCP/IP configuration. (In this example, the system finds the Ethernet Data Gateway device for ADAM-4570 & EDG-4516+ in a local network)



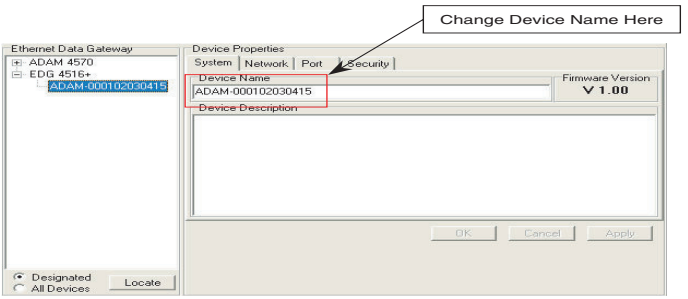
You can click on the device name to show the features of the specific device. Click on the "+" before the model name (e.g. EDG-4516(R)+), and the utility will expand the tree structure to show the individual device name.

For Example, EDG Configuration Utility shows "ADAM-00D0C968E17F" after expanding the tree structure.



Note *When you run the EDG configuration utility for the first time, the default device name is "MAC ID". In this case, the device name "ADAM-00D0C968E17F" means the device "MAC ID" is "00 D0 C9 68 E1 7F". You can change the default device name in System Tag of Device Properties.*

Note **Please reserve TCP port 5202 in your network , Configuration will use this port to communicate with EDG-4508(R)+ and EDG-4516(R)+.**



3.2 Locating EDG-4508(R)+/4516(R)+

The configuration utility provides a "Locate" function to assist you in finding a specific device. You can select the EDG Series as a group or just select one specific module, e.g. EDG-4508+ or EDG-4516+.

There are two different options for the Locate function

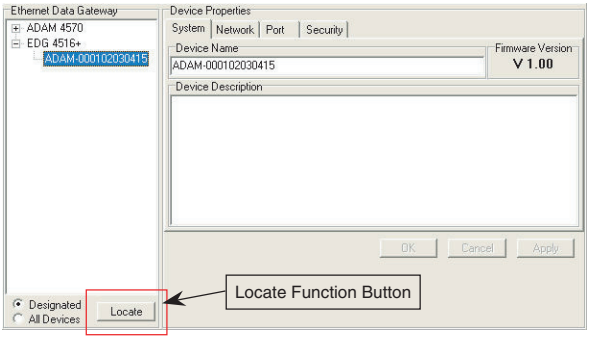
(1) Designated: locates a specific device for you.

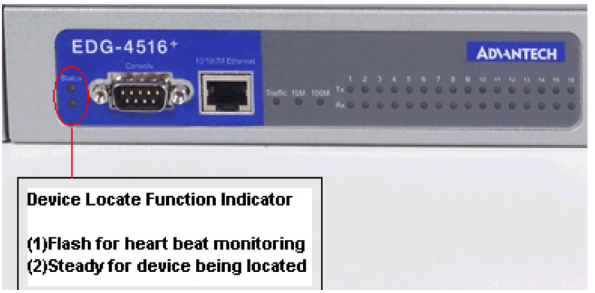
1. Select "Designated" and click "Locate"
2. The "Status" LED will remain steady for 8 minutes.
3. If you choose another device and click on "Locate", the "Status" LED of the previous choice will return to the heart beat monitoring mode.

(2) All Devices: To locate all devices for the system.

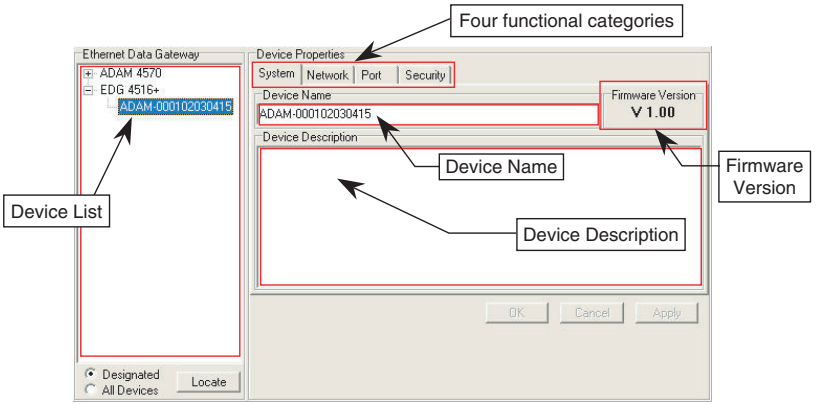
1. Select "All Devices" and click "Locate"

2. All "Status" LED devices will remain steady for 8 minutes.3. 8 minutes later or when someone enables the "Designated" Locate-function, the "Status" LED will return to its default heart beat monitoring.





3.3 Device System Configuration



The configuration utility only searches for EDG-4508(R)+ and EDG-4516(R)+ on the local network, and cannot search beyond a router or gateway. Make sure that the EDG-4508(R)+ or EDG-4516(R)+ you want to monitor resides in the same local network segment as the host PC.

Ethernet Data Gateway

In this column, you will find a list of EDG products if you use the configuration utility to auto-search.

Device Name

The configuration utility provides a default name to distinguish the different EDG devices from each other. You can update the default device name based on your application. Please note that names are restricted to 128 characters, and it is usually best to choose a name you can remember.

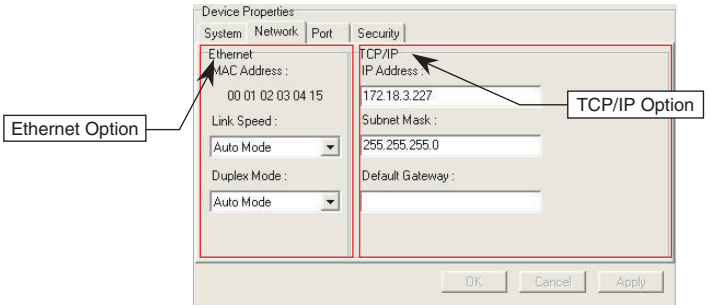
Device Description

This field records the function, application and other information for each EDG device in more detail for easy management and maintenance. You can describe in your own words.

Firmware Version

In this field, the configuration utility presents the firmware version of the EDG Series (e.g. V 1.10). You might need to refer to the firmware version to determine what functions are available on the EDG device. For problems related to firmware version, please provide the firmware version number to our Customer Service.

3.4 Network Configuration



Ethernet Option

MAC Address

This does not need configuration.

Link Speed

This function will show the current linking speed to be either 10Mbps or 100Mbps. However, the utility will auto-detect the current transmission speed on the network segment and set the transmission speed for the device accordingly.

Duplex Mode

The utility will detect the current transmission mode (half-duplex or full-duplex) on the network segment, and set the transmission mode for the device accordingly.

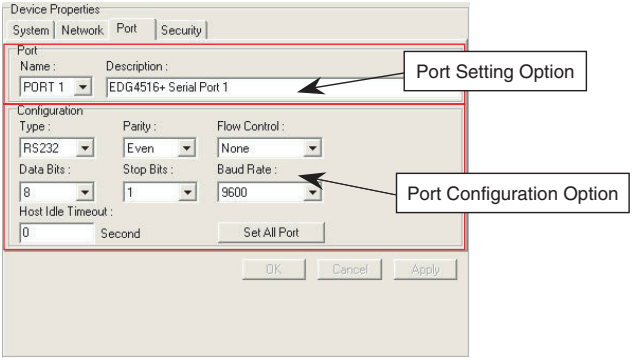
TCP/IP Option

IP address, Subnet Mask, Default Gateway

The IP address identifies your EDG device on the global network. Each EDG device has the same default IP address 10.0.0.1. Obtain a specific IP address from your network administrator and then configure each EDG device with an individual IP address, related Subnet Mask and Gateway Setting.

Note *EDG devices do not support auto IP address configured by DHCP server.*

3.5 Port Configuration



Port Setting

You can modify the description for individual port settings in the Port Setting Option.

Name

Show Port Name

8 Ports for EDG-4508(R)+

16 Ports for EDG-4516(R)+

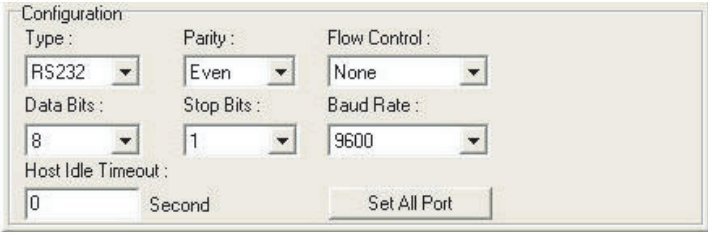
Description

Show individual description for each port.

You can change the description for your connected module to identify the connection from EDG Configuration Utility.

Port Configuration

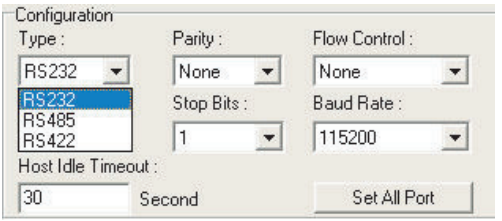
You can modify port configuration in this Configuration Option such as Type, Parity, Flow Control, Data Bits, Stop Bits, Baud Rate and Host Idle Timeout.



Type

Serial Port Type

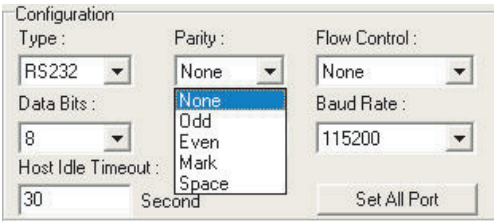
You can change the connection type for your module to: RS-232, RS-422 or RS-485.



Parity

Parity Check Type

You can follow the parity check type of your connected module. The following types are provided.

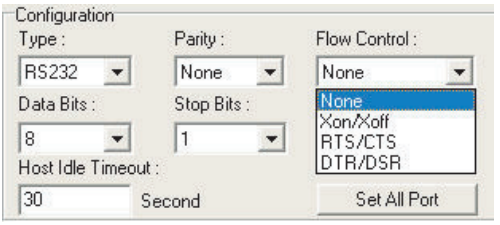


- None
- Odd
- Even
- Mark
- Space

Flow Control

Flow Control Type

You can choose the flow control type of your connected module. The following types are available.

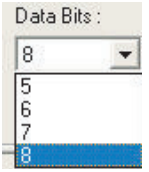


- None
- Xon/Xoff
- RTS/CTS
- DTR/DSR

Data Bits

Data Bits Type

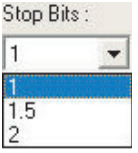
You can choose the number of Data Bits of your connected module to be 5, 6, 7 or 8.



Stop Bits

Stop Bits Type

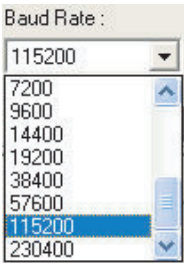
You can choose 1, 1.5 or 2 Stop Bits for your connected module



Baud Rate

Flow Control Type

You can choose the Baud Rate of your connected module. The following rates are available:



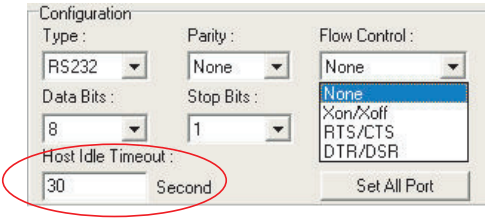
- 7,200
- 9,600
- 14,400
- 19,200
- 38,400
- 57,600
- 115,200
- 230,400

*** Set All Port**

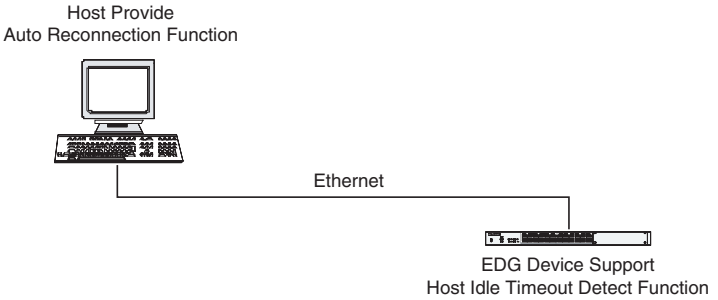
The ‘Set All Port’ function helps you set all serial ports at one time. All you need is to set one port and click the "Set All Port" button. The other ports will then follow the first port that you have set up. This is faster than setting up 8 ports (EDG-4508(R)+) or 16 ports (EDG-4516(R)+) with the same settings.

Host Idle Timeout

The ‘Host Idle Timeout’ setting monitors the connection between the host and the device. If the ‘Host Idle Timeout’ setting time is reached, the device will release the resources allocated to the port mapping. This prevents a stalled host from affecting the connected device. .



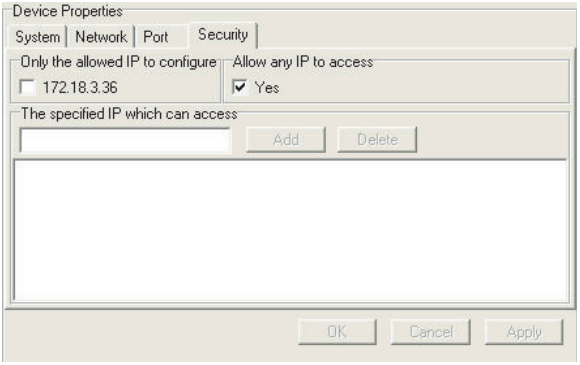
Note *Host Idle Timeout and Auto Reconnection Function Detail*



Auto Reconnection

An auto reconnection function is provided by the host. Under certain circumstances (such as: Ethernet connection failure, device power down or other device issues) the auto reconnection function will try to reconnect the assigned device.

3.6 Security Configuration



For security reasons, you are highly recommended to use EDG's security features. The EDG configuration utility provides security functions for the network structure.

Only configure the allowed IP

The system will auto detect the IP address for the currently connected computer. If you enable this function, only your current host computer can access this EDG Device.

*If you use Dynamic IP Assignment by the DHCP Server, we suggest that this function is not enabled.

Allow any IP to access

If you enable this function, any IP address can access your device and there is **no access restriction**.

Specified IP can access EDG device

You can assign a specific IP address that have have authority to access the EDG device. Assign the IP address and click on "Add" to add a specified IP or choose the IP address list below and click on "Delete" to remove the IP from the access list.

CHAPTER 4

Port Mapping Utility

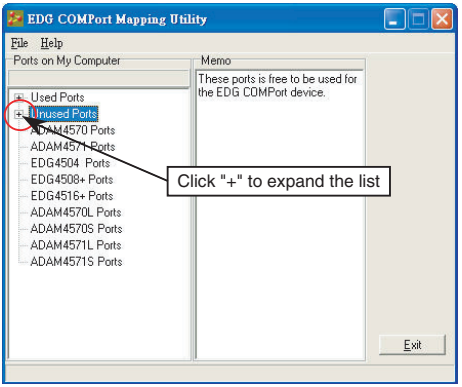
Chapter 4 Port Mapping Utility

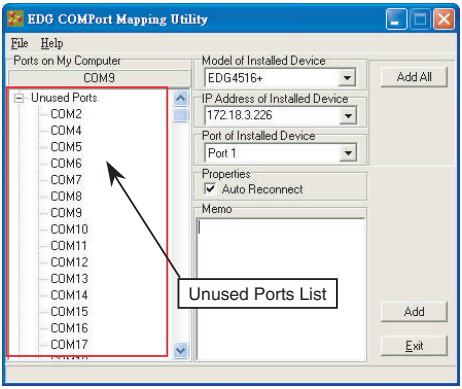
4.1 Overview

The purpose of the port mapping utility is to help you manage all ports on one Windows 98/NT/2000/ME/XP platform. The utility displays three types of ports: used ports, unused ports and EDG ports. Please follow the Virtual COM port setting steps.

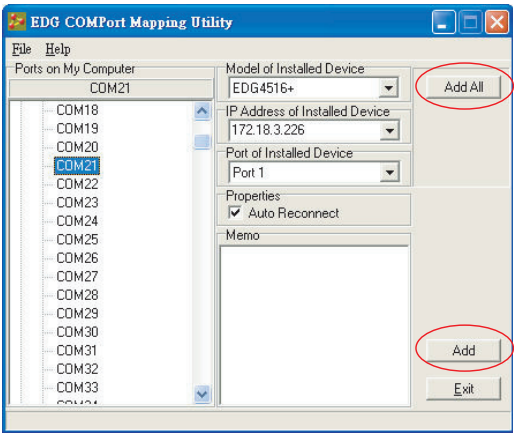
4.2 Virtual COM Port Settings

1. Click "+" at "Unused Ports" to expand the unused port lists, and select the port that you want to configure.





2. Click the ADD button to assign a COM port to an EDG device.



Module of Installed Device

You can choose between all connected EDG devices. In this example, "EDG-4516+" was chosen.

IP Address of Installed Device

Enter the IP address you assigned in chapter 3.4.

Port of Installed Device

Choose the port where you want to setup: 8 ports for EDG-4508(R)+ and 16 ports for EDG-4516(R)+.

Properties (Auto Reconnect Function)

Sometimes, the system may crash because the EDG device is interrupted or powered-off by accident. In such a situation, the host PC need to reconnect to the EDG device automatically.

EDG devices provide an "Auto-reconnect" function for this purpose. If the EDG device loses the connection to its host, the driver will automatically try to re-establish the connection. When the connection is working again, the host PC's commands will be automatically received by the EDG Series again. Reconfiguration is not necessary, so this function enhances the reliability of the system.

Memo

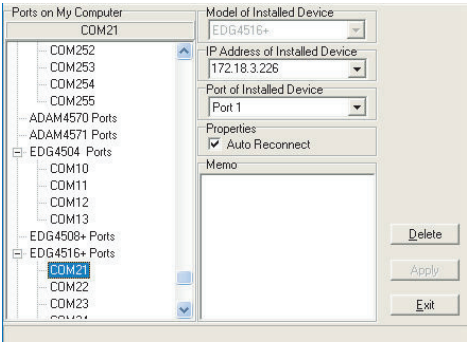
You can add a description to the port setting if necessary.

Add Add

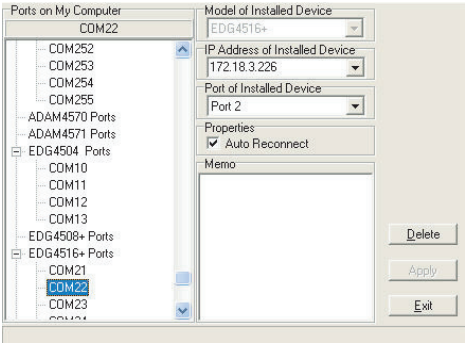
Click here to add a single port setting to your specification.

Add All Add All

You can assign all ports to follow current settings by clicking the "Add All" button. This is more convenient than adding ports individually. For this example, we have selected COM21 and made all necessary settings for Port 1 of EDG-4516+. After clicking on the "Add All" button, the COM Port Mapping Utility will assign the COM21 ~ COM36 mapping to Port 1 ~ Port 16.

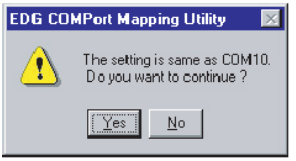


(COM21 is mapping to Port 1 of EDG-4516+)



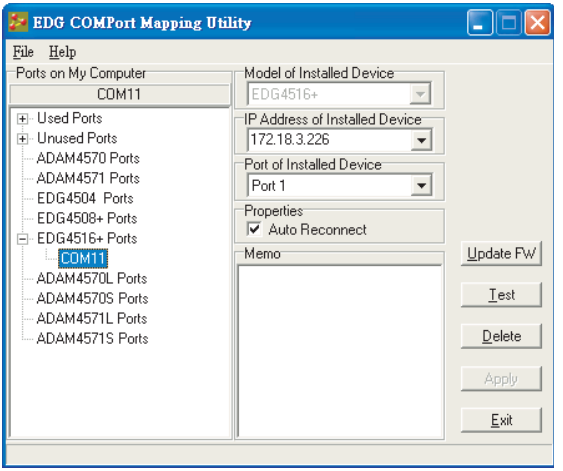
(COM22 is mapping to Port 2 of EDG-4516+)

Note *If you assigned a different COM port to the same EDG series module port, the following dialog box will remind you.*



4.3 Inquiring Virtual COM Port Setting

You can check the virtual COM port setting by clicking on the EDG device's ports. In this case, COM11 is assigned to Port 1 of EDG-4516+.

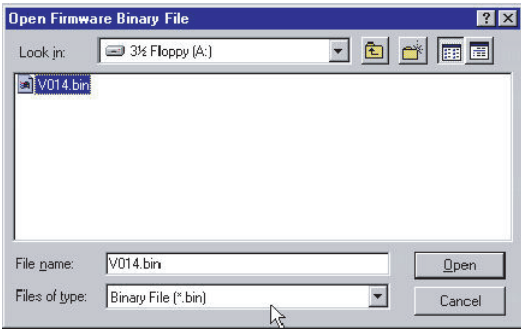


4.3.1 Updating EDG Firmware

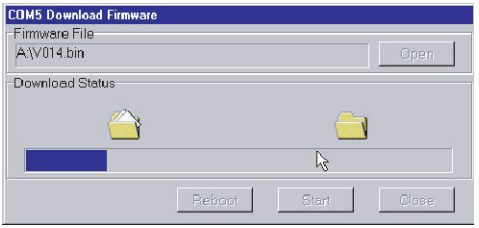
Updating Firmware Update FW

Advantech continually upgrades its firmware. You can use the download function located on the Port Mapping utility to carry out the upgrade procedure. Please access Advantech's web site at http://www.advantech.com to download the required computer file and then follow these instructions.

1. Click on the Update FW icon in the toolbar.
2. Locate and then select the filename of the firmware that you have downloaded.



3. After the firmware has been downloaded into the EDG device, click the Reboot button.



4. Restart the host PC so that it can recognize the updated firmware on the EDG device.

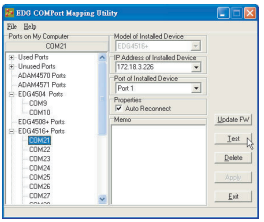
Note *After clicking the Reboot button, the configuration utility will **not** reboot the EDG device.*

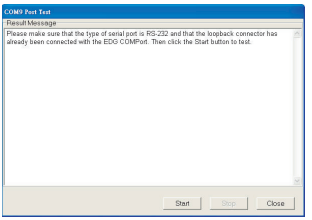
4.3.2 Self Test Function

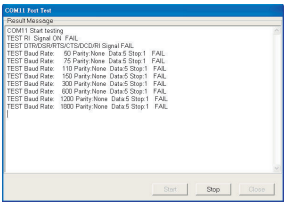
Test Test

The purpose of this test is to confirm that the communication from the host PC to the EDG device is OK. When the test is selected, an external test will be performed to check that the connection signal between each port is working properly. For this test, you will need to connect each port to a Loopback tester. Refer to the following chart for specifications of this Loopback tester. The Loopback test only applies to RS-232 mode. It is divided in two parts: Signal test and Communication Parameters test.

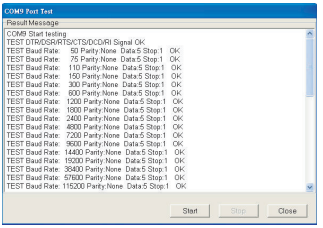
1. Click on the Test button in the Port Mapping utility. A message will confirm that the loopback connector have already been connected with the EDG COM port. If ready, click the Start button to start the test.




COM9 Port Test
Result Message
Please make sure that the type of serial port is RS-232 and that the loopback connector has already been connected with the EDG COMPort. Then click the Start button to test.
Start
Stop
Close


COM11 Port Test
Result Message
COM11 Start testing
TEST RI_Signal ON FAIL
TEST DTR/DSR/RTS/CTS/DCD/RI Signal FAIL
TEST Baud Rate: 50 Parity:None Data:5 Stop:1 FAIL
TEST Baud Rate: 75 Parity:None Data:5 Stop:1 FAIL
TEST Baud Rate: 110 Parity:None Data:5 Stop:1 FAIL
TEST Baud Rate: 150 Parity:None Data:5 Stop:1 FAIL
TEST Baud Rate: 300 Parity:None Data:5 Stop:1 FAIL
TEST Baud Rate: 600 Parity:None Data:5 Stop:1 FAIL
TEST Baud Rate: 1200 Parity:None Data:5 Stop:1 FAIL
TEST Baud Rate: 1800 Parity:None Data:5 Stop:1 FAIL
Start
Stop
Close

Test Fail (Without Loopback Connector)


COM9 Port Test
Result Message
COM9 Start testing
TEST DTR/DSR/RTS/CTS/DCD/RI Signal OK
TEST Baud Rate: 50 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 75 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 110 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 150 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 300 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 600 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 1200 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 1800 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 2400 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 4800 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 7200 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 9600 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 14400 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 19200 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 38400 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 57600 Parity:None Data:5 Stop:1 OK
TEST Baud Rate: 115200 Parity:None Data:5 Stop:1 OK
Start
Stop
Close

Test ok

Signal Test

- RTS->CTS: Checks the RTS and CTS signals between two ports.
- DTR->RI: Checks the DTR and RI signals between two ports.
- DTR->DSR: Checks the DTR and DSR signals between two ports.
- DTR->DCD: Checks the DTR and DCD signals between two ports.

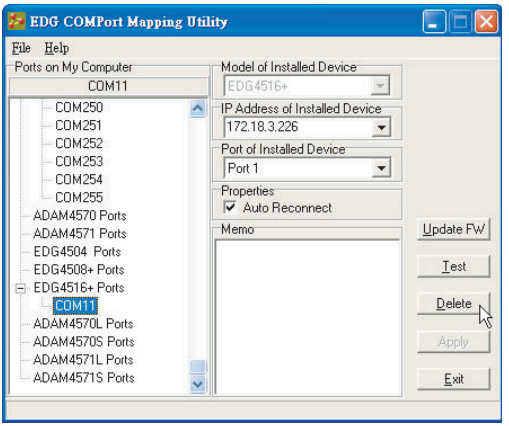
Communication Parameters Test

- Baud rate: From 50 bps to 230 kbps
- Data bits: 5, 6, 7, 8
- Stop bits: 1, 1.5, 2
- Parity: odd, even, none, space, mark

2. Click the OK button to return to the port mapping window. All the ports in the EDG Series are tested ok.

Delete Delete

You can delete Port Mapping Setting by clicking th Delete button.



Apply Apply

If any changes are made, please press the Apply button to confirm your modifications.

Exit Exit

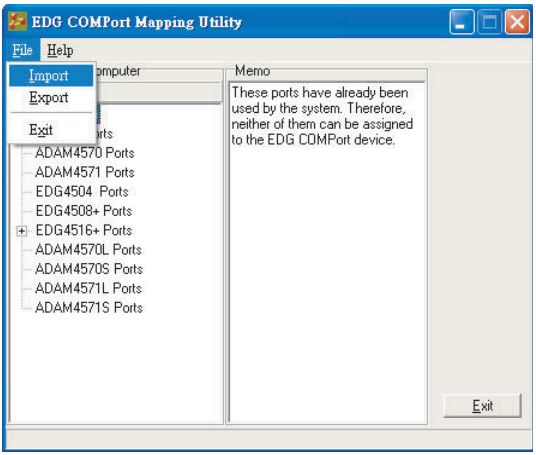
If you want to quit the utility, please click on Exit button. If any changes are made in the COM Port Mapping setting, the system reboot requirement will show up. Please reboot your system to make sure your changes will work.

4.3.3 Save the Configuration

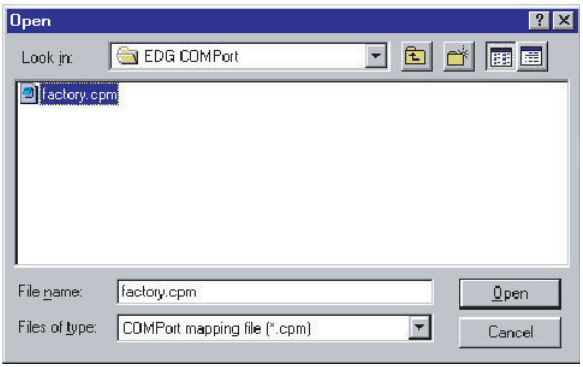
If you want to save or recover the configuration, you can select the "Import/Export" items.

1. a. Select "File"

   b. Select "Import" or "Export".



2. Save or open the configurations



CHAPTER 5

Web-Based Configuration

Chapter 5 Web-Based Configuration

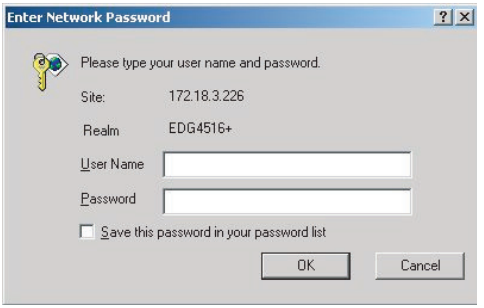
5.1 Overview

EDG devices can be configured through a web interface. By using a standard web browser, the same procedure as with the Windows configuration utility can be used. In the browser's address field, enter the IP Address of your EDG device. The default IP setting is 10.0.0.1, but you should use the IP which you have previously assigned for this device. Once the IP is entered, you will be presented with the following windows.

5.2 Access Web Page

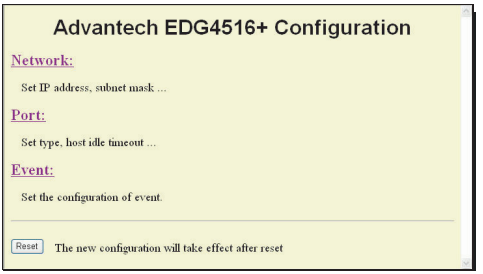
Step 1. Enter ID and Password

The default ID *and* password is **root**, key this into both fields..



Step 2. Web Based Configuration Welcome

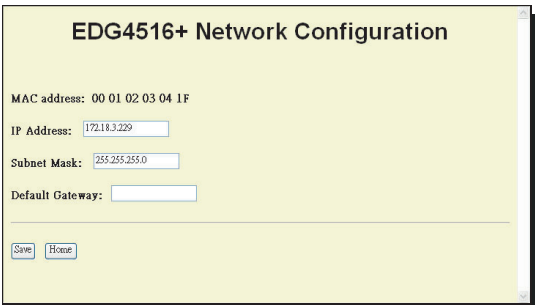
After authorization, the main configuration menu will be displayed.



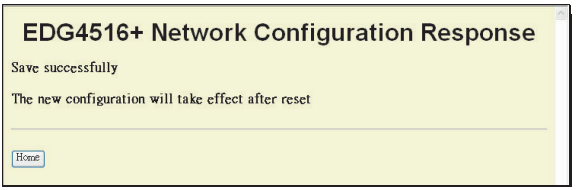
5.3 Network Configuration

Under network configuration, there are: MAC address, IP Address, Subnet Mask and Default Gateway. Enter the corresponding values for your network environment.

Step 1. Enter IP Address, Subnet Mask and Default Gateway



Step 2. Press 'Save' to store the settings.

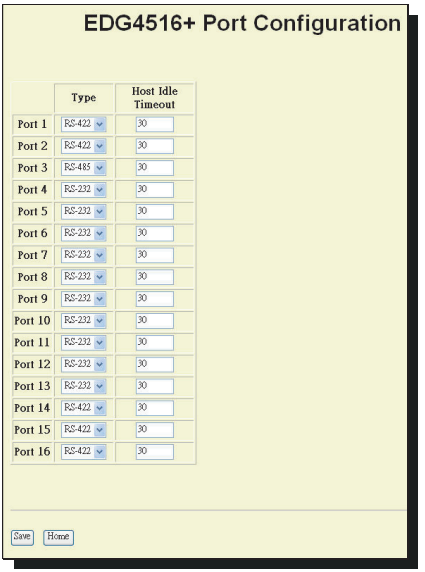


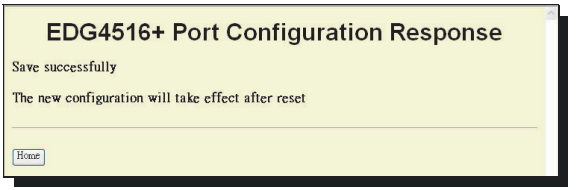
Note *All new configurations will take effect after reset. The reset function is located on the main menu of the Web Configuration.*

5.4 Port Configuration

Under port configuration, you can as sign the type and host idle timeout for individual ports.

Note *EDG-4508(R)+ and EDG-4516(R)+ support RS-232/ RS-422/RS-485..*

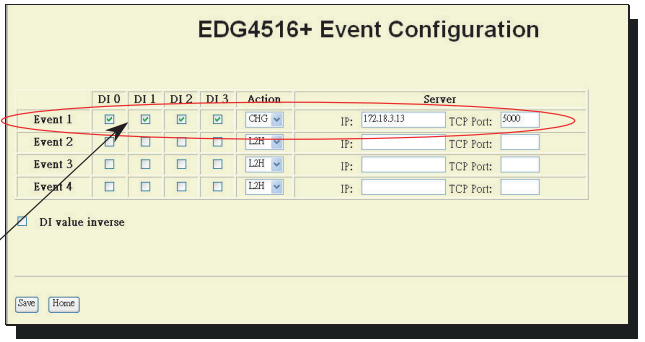




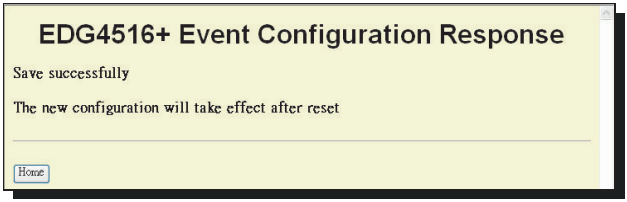
Note *The Host Time Out function is similar to the one in the Configuration Utility.*

5.5 DI/O Event Configuration

In event configuration, you can assign an DI event by enabling the check box and choosing the optimized action mode, Server IP and TCP Port for the active event.

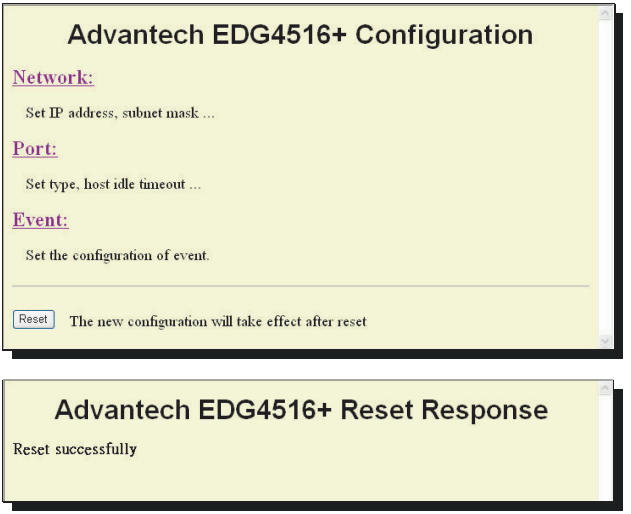


DI 0, DI 1, DI 2, DI 3 Options for Event 1 will be activated when any one of DI signal meets the Action option. The event will be monitored on the Server and port of your assignment.



5.6 Reset Configuration

All configurations will take effect after this reset step. Press the reset button and the system will give a reset response. It will take a few seconds to reconnect with the new values.



CHAPTER 6

Console Configuration

Chapter 6 Console Configuration

6.1 Overview

The purpose of the Console Configuration is to help you manage your device in console mode. One of the main functions of the console mode is to change the web configuration login password. You can use terminal software like Hyper Terminal, Telix and other related terminal software.

6.2 Hyper Terminal Connection

Step 1. Connecting the cable

You can connect to the EDG device's console port with a RS-232 DB9 M-type communication cable, with the other end connecting to the host's serial port. Make sure the connection is OK and then run the Hyper Terminal Program on your host.

Step 2. Creating a new connection

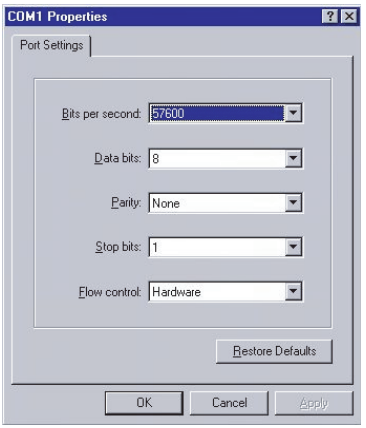
You can create a new connection and assign a connection name for the console configuration.

Step 3. Selecting a COM Port

Confirm that the console configuration works ok.

Step 4. COM Port Setting

To connect the EDG series for console configuration, the port setting should match the EDG series' default setting.



Console Configuration Default Setting

Baud Rate: 57600

Data Bits: 8

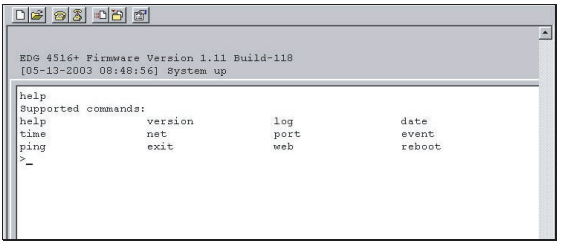
Parity: None

Stop Bits: 1

Flow Control: None

Step 5. Connecting Successfully

After connecting the device in console mode, you can simply type the "Help" command to show the Supported Command Lists



6.3 Command List

Command	Function
version	Displays the current firmware version
log	Displays the log file
date	Displays or sets the date
time	Displays or sets the time
net	Displays the net configuration
port	Displays the status of port(s)
event	Displays the configuration of event(s)
ping	Sends ICMP ECHO_REQUEST packets to network hosts
exit	Terminates shell session
web	Sets web password or saves web configuration
reboot	Reboots the system

- **version**
  [Usage] version
  [Function] displays the current firmware version
  >version
  Current version of firmware is 1.11-1.11

- **log**
  [Usage] log
  [Function] displays log file
  >log
  [05-09-2003 17:01:17] System up

- **date: displays or sets the date**
  [Usage] date
  [Function] displays the date
  >date
  Current date is 05-09-2003
  [Usage] date [mm-dd-yy [dse]]
  [Function] sets the date
  >date 06-09-03
  >date
  > Current date is 06-09-2003

- **time: displays or sets the time**
  [Usage] time
  [Function] displays the configuration
  >time
  Current time is 17:17:30

  [Usage] time [hh.mm.ss]
  [Function] sets the time
  >time 17:17:50
  >time
  Current time is 17:17:55

- **net**
  [Usage] net
  [Function] displays the configuration of net
  >net
  Current net is ip 172.18.3.226 gw 0.0.0.0 netmask 255.255.255.0

  [Usage] net set ip d.d.d.d gw d.d.d.d netmask d.d.d.d
  [Function] sets the configuration of net
  >net set ip 172.18.3.227 gw 0.0.0.0 netmask 255.255.255.0
  >net
  Current net is ip 172.18.3.227 gw 0.0.0.0 netmask 255.255.255.0

  [USAGE] net save
  [FUNCTION] saves the configuration of net to system

Note *You should use the net save command to activate the changes.*

- **port**

  [USAGE] port [nn | all]
  [FUNCTION] displays the status of port(s)
  >port all
  The Port01 is type 422, idleto 30, idle
  The Port02 is type 232, idleto 30, idle
  The Port03 is type 232, idleto 30, idle
  The Port04 is type 232, idleto 30, idle
  The Port05 is type 232, idleto 30, idle
  The Port06 is type 232, idleto 30, idle
  The Port07 is type 232, idleto 30, idle
  The Port08 is type 232, idleto 30, idle
  The Port09 is type 232, idleto 30, idle
  The Port10 is type 232, idleto 30, idle
  The Port11 is type 232, idleto 30, idle
  The Port12 is type 232, idleto 30, idle
  The Port13 is type 232, idleto 30, idle
  The Port14 is type 422, idleto 30, idle
  The Port15 is type 422, idleto 30, idle
  The Port16 is type 422, idleto 30, idle

  [USAGE] port [nn | all] type [232|422|485]
  [FUNCTION] sets the type of port(s)
  >port 3 type 485
  >port 3
  The Port03 is type 485, idleto 30, idle

  [USAGE] port [nn | all] idleto [0 - 4095]
  [FUNCTION] sets the idle timeout of port(s)
  >port 3 idelto 45
  >port 3
  The Port03 is type 485, idleto 45, idle

  [USAGE] port save
  [FUNCTION] saves the configuration of port to system

Note *You should use the net save command to activate the changes.*

- **event**

  [USAGE] event [nn | all]
  [FUNCTION] displays the configuration of event(s)
  [USAGE] event nn iomap xx action [L2H|H2L|CHG] server d.d.d.d:d
  [FUNCTION] sets the configuration of event
  [USAGE] event [nn | all] clear
  [FUNCTION] clears the configuration of event
  >event 2 iomap f action L2H server 172.18.3.58:503
  >event 2
  The Event2 is iomap f action L2H server 172.18.3.58:503
  >event 2 clear
  >event all
  The Event1 is iomap f action CHG server 172.18.3.58:502
  The Event2 is disable
  The Event3 is disable
  The Event4 is disable
  The inverse of DI value is off
  [USAGE] event diinv [0|1]
  [FUNCTION] sets the inverse of DI value on/off
  >event diinv 1
  >event all
  The Event1 is iomap f action CHG server 172.18.3.58:502
  The Event2 is disable
  The Event3 is disable
  The Event4 is disable
  The inverse of DI value is on
  >event diinv 0
  >event all
  The Event1 is iomap f action CHG server 172.18.3.58:502
  The Event2 is disable
  The Event3 is disable
  The Event4 is disable
  The inverse of DI value is off
  [USAGE] event save
  [FUNCTION] saves the configuration of event to system

Note *You should use the net save command to activate the changes.*

- **ping**

  [USAGE] ping addr (addr: IP address of destination host)
  [FUNCTION] Sends ICMP ECHO_REQUEST packets to network hosts
  >ping 172.18.3.226
  32 bytes from 172.18.3.226: icmp_seq=0 ttl=64 time=1 ms
  32 bytes from 172.18.3.226: icmp_seq=1 ttl=64 time=1 ms
  32 bytes from 172.18.3.226: icmp_seq=2 ttl=64 time=1 ms
  32 bytes from 172.18.3.226: icmp_seq=3 ttl=64 time=1 ms

- **exit**

  [USAGE] exit
  [FUNCTION] Terminates shell session
  >exit
  Bye!

- **web**

  [USAGE] web password ****
  [FUNCTION] sets the web password
  >web password 1234
  >web save
  [USAGE] web save
  [FUNCTION] saves the configuration of web to system
  >web save

Note *You should use the web save command to activate the changes.*

- **reboot**

  [USAGE] reboot
  [FUNCTION] reboots the system
  >reboot
  EDG 4516+ Firmware Version 1.11 Build-118
  [05-09-2003 18:25:57] System up

CHAPTER 7

Event and DI/O Monitoring

Chapter 7 Event and DI/O Monitoring

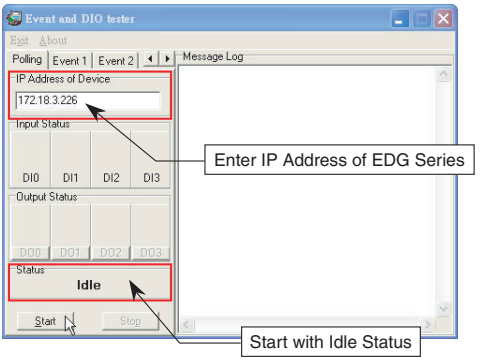
7.1 Overview

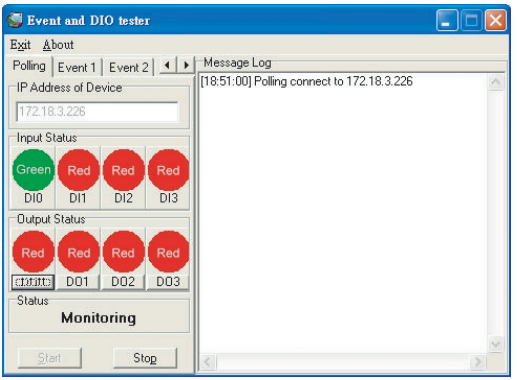
The purpose of Event and DIO Test is to help you monitor your EDG-4508(R)+/4516(R)+ DI/DO event(s). Follow these steps to test the DI/DO event(s).

7.2 Event and DI/O Monitoring

7.2.1 Polling Monitoring

The following screen will appear once the EVENT Tester Program is executed. To start monitoring the Polling, enter the IP Address and press start. The Status will change to Monitoring if you enter the correct IP of your device.

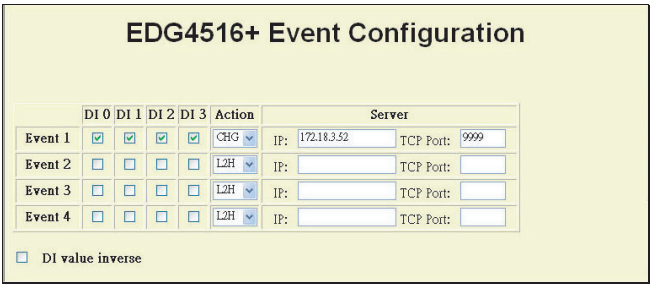




7.2.2 Event Monitoring

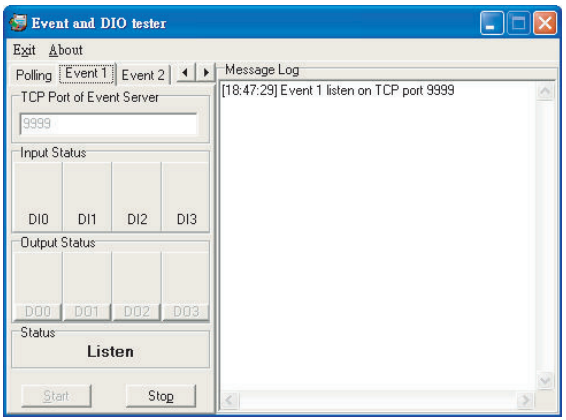
Once you have executed the steps in Chapter 3.4, you can use the tester to monitor the event status with the port and IP you have assigned before. Please follow these steps:

Step 1. Assign IP and TCP Port for monitoring



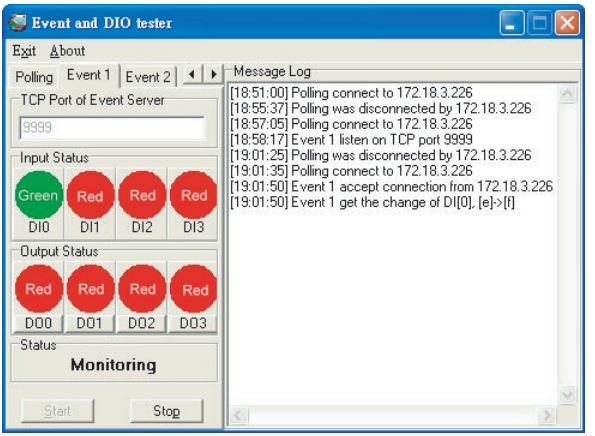
(Setting Event monitoring from Web Event Configuration)

Step 2. Assign TCP Port of Event Server and click on "Start". Event and DIO tester will change to Monitoring Mode. Red indicator in normal mode means Inactive and Green indicator means Active.



(Event Monitoring and no Event Active)

Step 3. We can activate the DI0 event; tester will show the green indicator. Message Log will show event log with timer and event description.

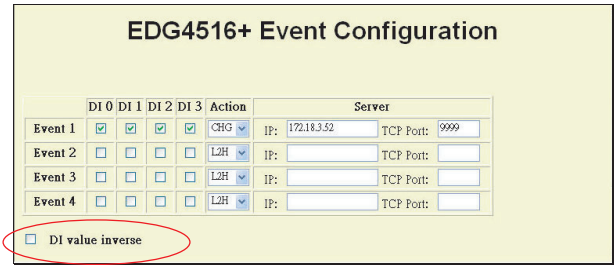


(DI0 Active and Event Monitor Shows Green)

7.2.3 DI Value Inverse Option

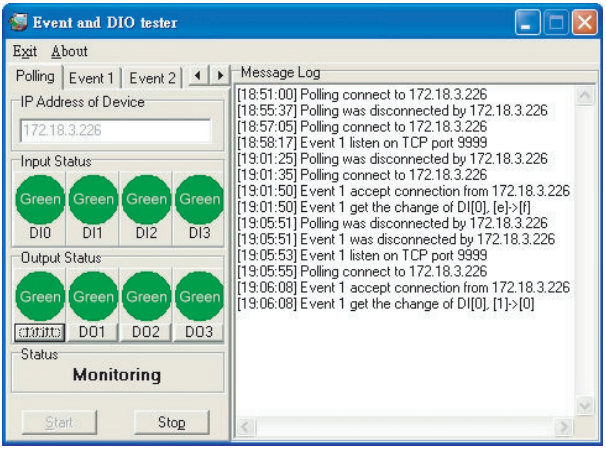
Because of different wiring issues, we have provided DI value inverse optional function to Inverse DI value. You can select the correct functions to match the results.

Step 1. DI value inverse function

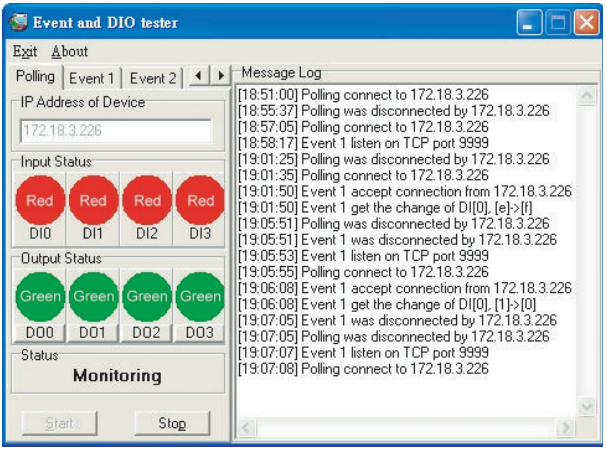


(Setting Event monitoring DI value Inverse Option)

Step 2. After enabling DI value inverse function, Green indicator means inactive and Red indicator means active.


Event and DIO tester
Exit About
Polling Event 1 Event 2
IP Address of Device
172.18.3.226
Input Status
Green Green Green Green
DI0 DI1 DI2 DI3
Output Status
Green Green Green Green
DO0 DO1 DO2 DO3
Status
Monitoring
Start Stop
Message Log
[18:51:00] Polling connect to 172.18.3.226
[18:55:37] Polling was disconnected by 172.18.3.226
[18:57:05] Polling connect to 172.18.3.226
[18:58:17] Event 1 listen on TCP port 9999
[19:01:25] Polling was disconnected by 172.18.3.226
[19:01:35] Polling connect to 172.18.3.226
[19:01:50] Event 1 accept connection from 172.18.3.226
[19:01:50] Event 1 get the change of DI[0], [e]->[f]
[19:05:51] Polling was disconnected by 172.18.3.226
[19:05:51] Event 1 was disconnected by 172.18.3.226
[19:05:53] Event 1 listen on TCP port 9999
[19:05:55] Polling connect to 172.18.3.226
[19:06:08] Event 1 accept connection from 172.18.3.226
[19:06:08] Event 1 get the change of DI[0], [1]->[0]

Step 3. After DI value inverse is enabled, follow the event configuration rule from the web configuration.


Event and DIO tester
Exit About
Polling Event 1 Event 2
IP Address of Device
172.18.3.226
Input Status
Red Red Red Red
DI0 DI1 DI2 DI3
Output Status
Green Green Green Green
DO0 DO1 DO2 DO3
Status
Monitoring
Start Stop
Message Log
[18:51:00] Polling connect to 172.18.3.226
[18:55:37] Polling was disconnected by 172.18.3.226
[18:57:05] Polling connect to 172.18.3.226
[18:58:17] Event 1 listen on TCP port 9999
[19:01:25] Polling was disconnected by 172.18.3.226
[19:01:35] Polling connect to 172.18.3.226
[19:01:50] Event 1 accept connection from 172.18.3.226
[19:01:50] Event 1 get the change of DI[0], [e]->[f]
[19:05:51] Polling was disconnected by 172.18.3.226
[19:05:51] Event 1 was disconnected by 172.18.3.226
[19:05:53] Event 1 listen on TCP port 9999
[19:05:55] Polling connect to 172.18.3.226
[19:06:08] Event 1 accept connection from 172.18.3.226
[19:06:08] Event 1 get the change of DI[0], [1]->[0]
[19:07:05] Event 1 was disconnected by 172.18.3.226
[19:07:05] Polling was disconnected by 172.18.3.226
[19:07:07] Event 1 listen on TCP port 9999
[19:07:08] Polling connect to 172.18.3.226

7.3 Programming I/O

According the feature list, it mentioned EDG-4508+/4516+ provide the D/I AND D/O handling function. In order to help customer to create the I/O event handling environment. We provide a programmable I/O sample program for customer use. After installing the EDG COM Port Utility, the sample programs will be on the location as follow:

C:\Program Files\Advantech\EDG COMPort Utility\samples\vc\edgevtio.

How to use the sample files?

(1) The sample programs include following file and the develop environment is based on Microsoft Visual C++.
edgevtio.cpp
edgevtio.dsp
edgevtio.dsw
edgevtio.ncb
edgevtio.opt
edgevtio.plg
mbtcp.h

(2) Compiler the sample program

(3) Run the sample program
After compiler the program and run the program, the system will change to Server mode to trigger any D/I event and sent back to system to active the D/O event.

(4) You can modify the program and create your own event handling process.

(5) Sample files list and description as follow:
edgevtio.cpp : Defines the entry point for the console application.edgevtio.dsp
edgevtio.dsp : Microsoft Developer Studio Project File
edgevtio.dsw : Microsoft Developer Studio Workspace File
edgevtio.ncb : Microsoft C/C++ program database
edgevtio.opt
edgevtio.plg
mbtcp.h

In this sample files, we provide the note for the parameter for programmer use.
For example:
In edgevtio.cpp file content, line 32 to line 41

```
memset(&HostAddr, 0, sizeof(SOCKADDR_IN));
HostAddr.sin_family = AF_INET;
HostAddr.sin_addr.s_addr = INADDR_ANY;
HostAddr.sin_port = htons(5000);
//                  |
//                  +-->The TCP Port in the server application
```

It remarks the function of htons(n), the parameter n means the TCP Port in server application and It helps the programmer to make his own program easier by referencing the note we provided.

```
HostSock = socket(AF_INET, SOCK_STREAM, 0);
//         |
//         +-->Create the socket of TCP on the Host
```

It remarks the function of socket(AF_INET, SOCK_STREAM, 0), the function of socket(var1,var2,n) means to create the socket of TCP on Host. Programmer can also create the socket of TCP on the Host by himself.

edgevtio.dsp

Programmers can choose the develop tools for themselves. For example, in edgevtio.dsp file, the extension file name .dsp means Microsoft Developer Studio Project File. Programmer can open the file as a template to create their own programs.

edgevtio.dsw

File name of edgevtio means EDG Event I/O, extension name of dsw means it is a Microsoft Developer Studio Workspace file. This file is necessary when you open a Developer Studio Project and we make a warning note in file to reminder you not to modify or delete this related workspace file.

mbtcp.h

File name of mbtcp means Modbus TCP; we provide the easier definition of necessary parameter. For example,

```
#define MODBUSTCPMAXMSGLENGTH      288
#define MODBUSTCPMSGHDRLENGTH      6

typedef struct __MODBUSTCPMSG {
unsigned short wTransactionId;
unsigned short wProtocolId;
unsigned char byteMsgLenHigh;
unsigned char byteMsgLenLow;
unsigned char Data[2];
} TMODBUSTCPMSG;
```

MODBUSTCPMAXMSGLENGTH

MODBUS TCP Max Message Length

MODBUSTCPMSGHDRLENGTH

MODBUS TCP Message Header Length

* The programming I/O sample programs are for programmer's reference to make the event I/O program for their own environment. Programmers can open the file as a template file to make a new project of event.

CHAPTER 8

Troubleshooting

Chapter 8 Troubleshooting

This chapter explains how to solve some of the most common problems with the EDG Series. If you still have problems after reading this chapter, contact your dealer, or e-mail Advantech for help.

"Configuration Utility can not find EDG Series"

1. Check the "Power" LED. If it is off, you will have to:

   Make sure the EDG Series power cable is plugged in, and the server is receiving power.

   Check that the server's network connector is plugged in properly.

   Check that the input power is 90 VAC ~ 260 VAC, 47 ~ 63 Hz.

   Check that the fuse is OK.

2. Check the "Traffic" LED. If it is off, you will have to:

   Make sure the network connection is OK

   Make sure your network is 10/100 Mbps

3. If the above are completed, it means the EDG Series is okay. Next, check to see if the EDG Series and the host are in the same local area network.
4. Make sure your computer is properly connected to the network.

"Configuration utility can find EDG Series but cannot access EDG Series"

For security purpose, and to simplify operations, users can give the access right to specific PCs. Only these PCs can get data from EDG Series. While using the EDG Series, it is advised that you check to see if your PC is on the access right list.

"Cannot change the IP address or other server properties"

Only the network administrator can modify the EDG Series' configuration. Keep in mind, even when multiple hosts share the same network, administrative access is still protected. If you need to change any configuration settings, ask your network administrator for assistance.

"The host PC can access the EDG Series at this local site but later relocates the EDG Series to a remote site that PCs cannot access."

Your IP address might have changed because of different network interface connections, and as a result, you are no longer on the EDG Series' Access Control list. To resolve this issue:

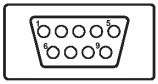
1. Confirm your IP address with the EDG Series.
2. Ask the network administrator to set up the server configuration so that you are on the EDG Series' Access Control list.

APPENDIX A

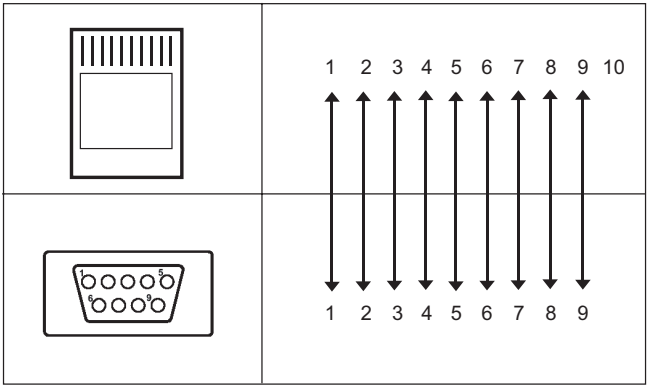
Appendix A

A.1 RS-232 Pin Assignment

Pin No.	Description
Pin 1	DCD
Pin 2	Rx
Pin 3	Tx
Pin 4	DTR
Pin 5	GND
Pin 6	DSR
Pin 7	RTS
Pin 8	CTS
Pin 9	RI



A.2 RJ-48 Cable PIN Assignment



RS-422

Pin No.	Description
1	Tx-
4	Tx+
5	GND
7	Rx+
9	Rx-

RS-485

Pin No.	Description
1	DATA-
4	DATA+
5	GND